

**What Is Claimed Is:**

1           1. A method of generating a waveform having a constant level periodically and a  
2 plurality of different levels in other durations, said method comprising:

3           receiving a first input signal having said constant level and a second signal having said  
4 plurality of different levels in other durations; and

5           selecting said first input signal periodically and said second signal in said other  
6 durations to generate said waveform.

1           2. The method of claim 1, wherein said first input signal is selected in alternative  
2 durations, wherein said alternative durations and corresponding ones of said other durations  
3 are contiguous such that said wave form is also continuous in time domain.

1           3. The method of claim 2, wherein said second signal comprises a data signal, and  
2 wherein said waveform comprises a CCD waveform.

1           4. The method of claim 3, wherein said CCD waveform is used to test a CDS  
2 (correlated double sampling) sampler at a high frequency.

1           5. An apparatus for generating a waveform having a constant level periodically and  
2 a plurality of different levels in other durations, said apparatus comprising:

3           means for receiving a first input signal having said constant level and a second signal  
4 having said plurality of different levels in other durations; and

5           means for selecting said first input signal periodically and said second signal in said

6 other durations to generate said waveform.

1 6. The apparatus of claim 5, wherein said first input signal is selected in alternative  
2 durations, wherein said alternative durations and corresponding ones of said other durations  
3 are contiguous such that said wave form is also continuous in time domain.

1 7. The apparatus of claim 6, wherein said second signal comprises a data signal, and  
2 wherein said waveform comprises a CCD waveform.

1 8. The apparatus of claim 7, wherein said CCD waveform is used to test a CDS  
2 (correlated double sampling) sampler at a high frequency.

1 9. A waveform generator for generating a waveform having a constant level  
2 periodically and a plurality of different levels in other durations, said waveform generator  
3 comprising:

4 a multiplexor receiving a first input signal having said constant level and a second  
5 signal having said plurality of different levels in other durations, said multiplexor selecting  
6 said first input signal periodically and said second signal in said other durations to generate  
7 said waveform.

1 10. The waveform generator of claim 9, wherein said first input signal is selected in  
2 alternative durations, wherein said alternative durations and corresponding ones of said other  
3 durations are contiguous such that said wave form is also continuous in time domain.

1           11. The waveform generator of claim 10, wherein said second signal comprises a data  
2           signal, and wherein said waveform comprises a CCD waveform.

1           12. The waveform generator of claim 11, wherein said CCD waveform is used to test  
2           a CDS (correlated double sampling) sampler at a high frequency.

1           13. The waveform generator of claim 12, wherein said high frequency corresponds  
2           to a period of less than 30 nano-seconds for said CCD waveform.

1           14. The waveform generator of claim 9, wherein said multiplexor comprises a first  
2           switch and a second switch respectively coupled to receive said first input signal and said  
3           second input signal, said first switch being operated to be in a closed state periodically and  
4           said second switch being operated to be in said closed state in said other durations.

1           15. The waveform generator of claim 14, wherein each of said first switch and said  
2           second switch is implemented using a respective core transistor having a low breakdown  
3           voltage and high speed.